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AMENDMENTS TO THE CLAIMS:

1. (**Currently Amended**) A method of tag-directed synthesis of a plurality of compounds, comprising:

(a) forming a first group of subsets of nucleic acid tags for participating in a first synthetic reaction step from a pool of nucleic acid tags, wherein each nucleic acid tag comprises a first hybridization sequence linked to a second hybridization sequence, which said second hybridization sequence is linked to a chemical reaction site, by contacting said nucleic acid tags with a plurality of first immobilized nucleotide sequences, each designed to capture a subset of said nucleic acid tags by hybridization between one of said first hybridization sequences and the first immobilized sequence;

(b) carrying out the first synthetic step by reacting the chemical reaction sites of the nucleic acid tags in each of the subsets formed in (a) with a selected one of a plurality of first reagents to convert the chemical reaction site of each subset of nucleic acid tag to a reagent-specific compound intermediate to produce subsets of reacted nucleic acid tags;

(c) pooling the subsets of reacted nucleic acid tags;

(d) forming a second group of subsets of the pooled reacted nucleic acid tags of step (c), for participation in a second synthetic reaction step, by contacting said pooled reacted nucleic acid tags with a plurality of second immobilized nucleotide sequences, each designed to capture a subset of said reacted nucleic acid tags by hybridization between one of said second hybridization sequences and the second immobilized sequence; and

(e) carrying out the second synthetic step by reacting the **reagent-specific compound intermediate of the** reacted nucleic acid tag in each of the subsets formed in (d) with a selected one of a plurality of second reagents.

2. (**Cancelled**)

3. (**Previously presented**) The method of claim 1, for use in forming a plurality of oligomers with different subunit sequences, wherein the plurality of first and second reagents in steps (b) and (e) include different oligomer subunits.

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AMENDMENTS TO THE CLAIMS:

1. (**Previously presented**) A method of tag-directed synthesis of a plurality of compounds, comprising:

(a) forming a first group of subsets of nucleic acid tags for participating in a first synthetic reaction step from a pool of nucleic acid tags, wherein each nucleic acid tag comprises a first hybridization sequence linked to a second hybridization sequence, which said second hybridization sequence is linked to a chemical reaction site, by contacting said nucleic acid tags with a plurality of first immobilized nucleotide sequences, each designed to capture a subset of said nucleic acid tags by hybridization between one of said first hybridization sequences and the first immobilized sequence;

(b) carrying out the first synthetic step by reacting the chemical reaction sites of the nucleic acid tags in each of the subsets formed in (a) with a selected one of a plurality of first reagents to convert the chemical reaction site of each subset of nucleic acid tag to a reagent-specific compound intermediate to produce subsets of reacted nucleic acid tags;

(c) pooling the subsets of reacted nucleic acid tags;

(d) forming a second group of subsets of the pooled reacted nucleic acid tags of step (c), for participation in a second synthetic reaction step, by contacting said pooled reacted nucleic acid tags with a plurality of second immobilized nucleotide sequences, each designed to capture a subset of said reacted nucleic acid tags by hybridization between one of said second hybridization sequences and the second immobilized sequence; and

(e) carrying out the second synthetic step by reacting the **reagent-specific compound intermediate of the** reacted nucleic acid tag in each of the subsets formed in (d) with a selected one of a plurality of second reagents.

2. (**Cancelled**)

3. (**Previously presented**) The method of claim 1, for use in forming a plurality of oligomers with different subunit sequences, wherein the plurality of first and second reagents in steps (b) and (e) include different oligomer subunits.